

Comparative Study Between Efficacy Of Dermaroller With Subcision And Microdermabrasion With Subcision In Treatment Of Acne Scarring

Devalla Sriteja¹, Galgali B. G.², Arjun C. Mapare³, Kulkarni L. V.⁴, Amey Kelkar⁵, Ajay Narayankar⁶

Junior Resident¹, Professor², Associate Professor³, Senior Resident^{4,6}, Assistant Professor⁵,
Department of Dermatology, Venerology and Leprology,
MIMSR Medical College, Latur, Maharashtra.

Abstract: Introduction: Acne vulgaris is a common disorder generally noted in young population, primarily teenagers and young adults. In recent times a number of cosmetic procedures have been developed for the treatment of post acne scarring. So an effort has to be made for the development of procedures which will be cosmetically acceptable as well as within the reach of the Indian population. **Objectives:** To compare efficacy of dermaroller with subcision and microdermabrasion with subcision in treatment of acne scarring. **Methods:** Sixty patients with atrophic acne scars were randomly allocated to two treatment groups treated either with combination of dermaroller with subcision or combination of microdermabrasion with subcision. A total of four sessions were carried out at an interval of one month in both groups. Acne scars were evaluated by the modified scoring system based on the nature, type and depth of scars. **Results:** Patients treated with dermaroller and subcision showed 47.44% reduction in mean acne scar scores while patients treated with microdermabrasion and subcision showed 35.24 percent reduction in mean acne scar scores. Ten patients in group 1 showed very good response while 17 patients showed good response. All 30 patients in group 2 showed good response. **Conclusion:** The results indicate that combination of dermaroller with subcision gives better results than combination of microdermabrasion with subcision in treatment of atrophic acne scars.

Keywords: Acne scars, subcision, dermaroller, microdermabrasion.

Introduction:

Acne vulgaris is a complex inflammatory skin disorder induced by multiple functional abnormalities of the pilosebaceous unit, including follicular hyperkeratinization, increased sebum production, propionibacterium acne proliferation and inflammation.⁽¹⁾ Consistent with the definition of chronicity, acne is characterized by prolonged course, a pattern of recurrence or relapse, manifestation as acute outbreaks or slow onset. Acne leads to social, psychological and emotional burden leading to impairment in the quality of life.²

Post acne scarring may occur in a large number of patients who do not undergo treatment in the early stage of the disease. Acne scars are broadly classified into 2 major groups - atrophic scars and hypertrophic or keloidal acne scars, atrophic scars being the most common scars.⁽²⁾ Acne is a very common disease among young adults. A high glycemic diet is taken to be contributory to the development of acne.

Acne scar classification system: A number of acne scar scales have been published till date. However, none of these were developed to be used in conjunction with acne severity grading. Several classifications like classification system based on the morphology of the scars⁽³⁾, Global Acne Scarring Classification⁽⁴⁾, Quantitative grading

system for acne scarring⁽⁵⁾ and Acne Scar Scoring System⁽⁶⁾ are followed in this study for results.

Treatment modalities: Microdermabrasion is a procedure in which the stratum corneum is partially or completely removed by light abrasion to correct or improve skin imperfections.⁽⁷⁾ Subcision involves the introduction of a hypodermic needle just beneath the dermis to release fibrous attachments tethering the epidermis and dermis to the subcutis. This results in skin elevation, initiates wound healing with consequent formation of connective tissue which augments the depressed site.⁽⁸⁾ Microneedling is based on the principle that superficial injury to the skin leads to the release of growth factors which stimulate the formation of new collagen and elastin in the papillary dermis. In addition to this new capillaries are also formed. This neocollagenesis and neovascularisation leads to remodeling of the skin ultimately leading to reduction of the scars.⁽⁹⁾

Materials And Methods:

This study was conducted at outpatient department of our medical college during the period July 2014 to July 2015. This study was conducted after obtaining ethical committee clearance as well as informed and written consent from all patients.

Study groups consist of patients presenting to our OPD with atrophic acne scars. They were divided into two groups 1 and 2. In all the patients first counseling is done in detail about nature of the treatment, side effects, complications and the expected outcome.

A detailed medical history was taken to consider whether the patient was recently taking isotretinoin treatment, presence of any keloidal tendencies, any previous surgical procedures which were carried out, immunocompromising conditions, smoking, degree of sun exposure and herpes simplex infections in the past. A general physical examination was done to see the presence of any keloid, any active infection or active inflammatory lesions of acne. Patients in group 1 and group 2 were treated with a combination of dermaroller with subcision and microdermabrasion with subcision respectively. Thirty patients were included in each group. Four sessions were carried out at an interval of one month in both the groups. Photographs were taken before and after treatment and also at the end of each session. Acne scars were evaluated by a modified scoring system based on the nature, type and depth of the scars. Three patients did not complete the treatment in group 1 while all the patients completed the treatment in group 2.

Inclusion Criteria: a) All patients over 18 years of age attending our OPD b) Patients willing to participate in the study.

Exclusion Criteria: a) Patient not willing to participate b) Pregnant and lactating women c) Children below 18 years of age d) Patients on anti coagulant therapy or those having bleeding disorders e) Patients with keloids or family history of keloids f) Patients on isotretinoin therapy in the past one year. g) Patients with active inflammatory acne h) Patients with history of allergies to aluminium oxide or local anaesthetics.

Results:

Comparison of Mean Pre-treatment and post treatment Acne scar score in both groups (Table 1) -In group 1 the mean pre treatment score was 151.37 (SD 30.29) while the mean post treatment score was 89.30 (SD 23). The difference was statistically significant as found by using paired t test (p=0.0001). In group 2 the mean pre treatment score was 151.73 (SD 27.78) while the mean post treatment score was 98.23 (SD 21.74). The difference was statistically significant as found by using paired t test (p=0.0001).

Comparison of mean reduction in acne scar score in both - The mean reduction in score in group 1 was by 71.81 (SD 23.02) while in group 2 was by 53.47 (SD 16.21). The

Table No. 1: Comparison of Mean Pre-treatment and post treatment Acne scar score in both groups

Sr. No.	Group	Pre-treatment		Post treatment		‘t’ value	‘p’ value	Significance
		Mean	SD	Mean	SD			
1	Group - I (n=27)	151.37	30.29	89.30	23	15.19	0.0001	Significant
2	Group - II (n=30)	151.73	27.78	98.23	21.74	18.08	0.0001	Significant

difference between the mean reduction in both the groups was statistically significant as found by using unpaired t test. (p=0.001).

Distribution of study subjects according to response after treatment - In Group 1, 17 patients (62.96%) showed good response while 10 patients (37.04%) showed very good response. In group 2, all 30 patients showed good response to the treatment. When Fishers exact test was applied the difference between the response in the two groups was statistically significant. (p=0.001)

Distribution of Study Subjects according to immediate adverse effects - Most common immediate adverse effect was bleeding which was shown by all patients in both the groups. In group 1, 24 patients (88.89%) experienced pain, 19 patients (70.37%) experienced erythema while 1 patient (3.70%) had secondary infection. In group 2, 24 patients (80%) experienced pain while 27 patients (90%) experienced erythema.

Distribution of Study Subjects according to delayed adverse effects - In group 1, 3 patients (11.11%) experienced post inflammatory hyperpigmentation while 2 patients (7.40%) experienced flare up of acne. In group 2, 4 patients (13.33%) experienced post inflammatory hyperpigmentation while 1 patient (3.33%) experienced flare up of acne. Fishers' exact test was applied. There was no significant difference between the adverse effects in both groups.

Reduction in grade after treatment - In group 1 total 13 patients showed reduction in grade post treatment. 5 patients showed reduction from grade 4 to grade 3 while 8 patients showed reduction from grade 3 to grade 2. 14 patients did not show any change of grade. In group 2 total 6 patients showed reduction in grade post treatment. 1 patient showed reduction from grade 4 to grade 2 while 5 patients showed reduction from grade 3 to grade 2. 24 patients did not show any change of grade.

Discussion:

Acne scars are a relatively common complication of acne. Although a number of treatment modalities are available for the treatment of acne scars, there is no single modality

which is effective in treating all types of scars. A combination of different treatment modalities have to be used.

In this study 60 patients were randomly divided into two groups. Patients in group 1 were treated with a combination of dermaroller with subcision while patients in group 2 were treated with a combination of microdermabrasion with subcision. A comparative study was carried out to determine which of the two combinations were more effective in the treatment of acne scars.

In this study, the mean age of patients in group 1 was 25.41 while in group 2 was 25, i.e. there was no significant difference between the mean age of patients in the two groups. In group 1 55.56% patients were male while 44.44% patients were females. In group 2 53.33% patients were male while 46.67% patients were females. Majority of the patients in the study had grade 3 scars.

Most of the patients presented with more than one type of scar. Boxcar scars were the most common type noted in 80.70% of the total patients taking part in the study. In group 1, total 13 patients showed reduction in grade post treatment. Five patients showed reduction from grade 4 to grade 3 while eight patients showed reduction from grade 3 to grade 2. Fourteen patients did not show any significant change of grade. In group 2 one patient showed reduction from grade 4 to grade 2 while five patients showed reduction from grade 3 to grade 2. 24 patients did not show any significant change of grade.

Bleeding was the most common adverse effect shown by all the patients in both the groups. In group 1, 88.89% patients experienced pain, 70.37% patients developed erythema while 3.70% patients developed secondary infection. In group 2, 80% patients experienced pain and 90% patients developed erythema. No secondary infection or persistent hematoma formation were noted.

Conclusion:

In this study 30 patients each of atrophic acne scarring were allotted in two groups. Patients in group 1 were treated with a combination of dermaroller with subcision while patients in group 2 were treated with a combination of microdermabrasion with subcision. 27 patients completed the treatment in group 1 while all 30 patients completed the treatment in group 2. Age of the patients ranged from 18 to 38 years. Most of the patients belonged to the 21 to 30 age group. The patients had more than 1 type of scar. Patients treated with dermaroller and subcision showed a 47.44 percent reduction in mean acne scar scores while patients treated with microdermabrasion

and subcision showed 35.24 percent reduction in mean acne scar scores. 10 patients in group 1 showed a very good response while 17 patients showed good response. All 30 patients in group 2 showed a good response. Microdermabrasion is an effective treatment modality for treatment superficial acne scars. Dermaroller and subcision are effective in treating deeper scars. Thus a combination of these treatment modalities will give a good result in the treatment of atrophic acne scarring.

On the basis of this study we conclude that a combination of dermaroller with subcision gives better results than a combination of microdermabrasion with subcision in the treatment of atrophic acne scars.

References:

1. Layton AM. Disorders of sebaceous glands. In: Burns T, Breathnach S, Cox N, Griffiths C. editors. Rooks Textbook of Dermatology. 8th ed. Blackwell Publishing Ltd;2010.P.42.17-42.20.
2. Kim G, James Q, Rosso D. Acne Scarring: Status report on treatment and management. *Cosmetic Dermatol* 2009 Feb;22(2):68-72.
3. Jacob CI, Dover JS, Kaminer MS. Acne scarring: a classification system and review of treatment options. *J Am Acad Dermatol*. 2001 Jul;45(1):109-17.
4. Goodman GJ. Management of post-acne scarring. What are the options for treatment?. *Am J Clin Dermatol*. 2000 Jan-Feb;1(1):3-17.
5. Fabbrocini G, Annunziata MC, D'Arco V, De Vita V, Lodi G, Mauriello MC, et al. Acne Scars: Pathogenesis, Classification and Treatment. *Dermatol Res Pract*. 2010; 2010: 893080
6. Rasheed AI. Non-ablative diode laser for treatment of post acne scars. *Egyptian Dermatol Online Journal* 2005 Dec;1(2):6.
7. Grimes PE. Efficacious and safe cosmetic procedures in skin of colour. *Cosmetic Dermatol* 2009 May;22(5):253-9.
8. Balighi K, Jamshidi S, Daneshpajoo M, Lajevardi V, Harandi SA, Ghassemi H. Subcision for acne scar with and without suctioning: A clinical trial. *Iran J Dermatol* 2011;14:95-9.
9. Doddaballapur S. Microneedling with Dermaroller. *J Cutan Aesthet Surg*. 2009 Jul-Dec; 2(2): 110-1.

Corresponding Author:

Dr. Devalla Sriteja

Junior Resident,
Department of Dermatology,
Venerology and Leprology,
MIMSR Medical College, Latur, Maharashtra.
E-mail: sriteja.88@gmail.com